



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB2001-0022-FEC

August 17, 2001

Mr. Rick Yarde
Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act
Essential Fish Habitat Consultation for Replacement of an Existing Fish Screen,
Construction of a New Bypass System, and Modification of the Diversion Intake on the
Farmers Irrigation District Canal on Hood River, Hood River County, Oregon

Dear Mr. Yarde:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) on the above referenced project. In this Opinion, NMFS concluded that the proposed action is not likely to jeopardize the continued existence of ESA-listed Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*) and LCR chinook salmon (*O. tshawytscha*), or destroy or adversely modify designated critical habitats. As required by Section 7 of the ESA, NMFS has included reasonable and prudent measures with nondiscretionary terms and conditions that NMFS believes are necessary to minimize the impact of incidental take associated with this action.

This Opinion also serves as consultation on Essential Fish Habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600.

If you have any questions regarding this consultation to Ron Lindland of my staff in the Oregon Habitat Branch at 503.231.2315.

Sincerely,

Donna Darm
Acting Regional Administrator

cc: Mary Headley, U.S. Army Corps of Engineers
Judy Jacobs, U.S. Fish and Wildlife Service
Steve Pribyl, Oregon Department of Fish and Wildlife
Jerry Bryan, Farmers Irrigation District
Mick Jennings, Confederated Tribes of the Warm Springs Reservation of Oregon

Endangered Species Act - Section 7 Consultation
Biological Opinion
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

Replacement of an Existing Fish Screen, Construction of a New Bypass Flow
Return System, and Modification of the Diversion Intake in the
Farmers Irrigation District Canal
Hood River Watershed
Hood River County, Oregon

Agency: Bonneville Power Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: August 17, 2001

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1. ENDANGERED SPECIES ACT

1.1 Background

On June 27, 2001, the National Marine Fisheries Service (NMFS) received a letter and attached biological assessment (BA) from the Bonneville Power Administration (BPA) requesting formal consultation on a proposed fish screen replacement, bypass flow return system construction, and water intake modification project on the Farmers Irrigation District (FID) Canal in the Hood River watershed. The BPA is funding the proposed project through the Confederated Tribes of the Warm Springs Indian Reservation of Oregon (CTWSRO), and BPA has been designated as the lead agency for Section 7 consultation under the Endangered Species Act (ESA). The applicant is the Farmers Irrigation District in Hood River, Oregon. NMFS toured the project site with project personnel on June 21, 2001. In the June 2001 BA, the BPA determined that Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*) may occur within the project area and that the proposed project is “likely to adversely affect” (LAA) LCR steelhead or their designated critical habitat. The historic run of wild LCR chinook salmon (*O. tshawytscha*) in Hood River is considered extinct. However, strays from other LCR chinook salmon populations may enter Hood River. Therefore, LCR chinook salmon will also be addressed in this Opinion.

The new horizontal flat plate (HFP) fish screen proposed for installation has been developed and evaluated by FID over several years. The FID has worked with NMFS, U.S. Fish and Wildlife Service (USFWS), Oregon Department of Fish and Wildlife (ODFW), and the CTWSRO personnel for the past two years in developing and testing the new screen design. In April 2001, the FID tested the screen by using steelhead fry and smolts and chinook fry (FID 2001). In a June 26, 2001, letter from NMFS to BPA, NMFS concurred that the HFP screen is worthy of further development, as biological testing appears promising and protective hydraulic conditions at the screen appear achievable through careful design. In that letter, NMFS also stated that “to achieve our acceptance of the facility for long-term use, the screen effectiveness must be gauged through post construction evaluation of: 1) Hydraulic conditions at the screen; and 2) biological evaluation of fish passing through the entire facility.”

The LCR steelhead was listed as threatened under the Endangered Species Act (ESA) by NMFS on March 19, 1998 (63 FR 13347). The LCR chinook salmon was listed as threatened under the ESA on March 24, 1999 (64 FR 14308). The NMFS designated critical habitat for LCR steelhead and LCR chinook salmon on February 16, 2000 (65 FR 7764) and issued protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). The proposed action is within designated critical habitat for LCR steelhead and LCR chinook salmon.

The NMFS prepared this biological opinion (Opinion) to address affects of the proposed project on these species. The objective of this Opinion is to determine whether the subject action is likely to jeopardize the continued existence of the above listed species or destroy or adversely modify critical habitat.

1.2 Proposed Action

The proposed action consists of: 1) Replacement of an existing rotary fish screen in the FID Canal with a new HFP fish screen; 2) construction of a new bypass system to return fish that have been diverted into the FID Canal from Hood River back to Hood River; and 3) modification of the FID Canal water diversion intake. The project is on Hood River near River Mile 11 (T2N, R9E, Section 29). No new roads would be built in association with the proposed project. Conservation measures to minimize and avoid potential impacts to listed fish and their designated critical habitat are described in Sections 6.2 and 7.0 through 7.3 of the BA, and are incorporated herein by reference.

1.2.1 Fish Screen Replacement

The existing rotary drum fish screen in the FID Canal would be replaced by an HFP Screen. The existing fish screen is approximately 500 feet down the FID Canal from the diversion intake. The new screen would be placed in a new concrete flume within the existing FID Canal alignment approximately 1000 feet downstream from the point of diversion. Water to the FID Canal would be shut off during installation of the new screen, so that work would occur in the dry. Once the new screen is in place, the old screen would be removed. The new screen is intended to meet NMFS acceptance standards regarding mortality and injury of salmonid smolts and fry.

Approximately 95 cubic feet per second (cfs) of water are currently diverted from Hood River into the FID Canal. The FID has historic water rights for this water. No additional water would be diverted from Hood River into the FID Canal because of this project. When the system flow is at steady state, the total diverted water would be split between the water to be used for irrigation (about 80 cfs) and the water to be used for the fish bypass (10 to 15 cfs). The irrigation water would pass through the plane of the screen with a uniform approach velocity of less than 0.1 foot per second (fps). Water that does not pass through the screen would be used as fish bypass water and would flow through the outlet transition throat into the newly constructed bypass channel, then into Joe's Creek (an intermittent stream), before returning to Hood River.

The screen would be dewatered only if maintenance is necessary or a catastrophic event occurred. For maintenance, the flow through the FID Canal would be slowly and carefully reduced to avoid stranding of fish on the screen. Fish would likely move downstream to the bypass area and into Joe's Creek as flow is reduced in the canal. FID personnel would walk down the screen as the water is lowered to ensure that fish are not stranded on the screen. During a catastrophic high flow event, such as a total debris block of the canal intake (based on past history this is unlikely), the intake gates at the pipeline would close gradually as flow is reduced and eventually close completely. In this case, the screen would be dewatered and fish could be stranded. However, FID has never experienced such an event with the existing system¹.

¹ E-mail from Richard Craven, Craven Consulting Group, to Ron Lindland, National Marine Fisheries Service (July 9, 2001) discussing the potential for dewatering of the fish screen in the FID Canal.

1.2.2 Construction of a New Fish Bypass System

The existing fish bypass consists of a flexible culvert situated so that fish exiting the bypass culvert drop approximately 10 feet to the surface of the water in Hood River. A new bypass system will be constructed to return fish from the FID Canal to Hood River. The upstream end of the new bypass would leave the FID Canal approximately 1000 feet downstream from the canal intake. Normal bypass flow through the newly constructed channel and into Joe's Creek is expected to be a continuous 10 to 15 cfs. Flows in the FID Canal may be interrupted during infrequent catastrophic events (e.g., floods) or for performance of maintenance.

To provide water to Joe's Creek if flows through the FID Canal are shut off, a 12-inch diameter pipeline would run parallel to and would be attached to the outside wall of the canal. To create the new bypass, approximately 120 feet of new channel will be constructed to connect the screen bypass with Joe's Creek. The new channel would have a slope of less than 1 percent and a bottom width of 16 to 20 feet, and would pass through an upland, forested area. Material excavated to create the new channel connecting the bypass outlet to Joe's Creek and pools in Joe's Creek will be stockpiled in areas where it cannot enter waterways. The newly constructed channel will enter Joe's Creek approximately 900 feet upstream from the Joe's Creek-Hood River confluence. Large woody debris (LWD) will be placed in the newly constructed channel to aid in stabilizing banks and create pools, and in Joe's Creek to create pool habitat. Erosion control fabric will also be used in the newly constructed channel. In addition to LWD placement, three pools would be excavated in the upper 500 feet of the existing channel of Joe's Creek.

An access road blocks Joe's Creek. A 20-foot long, 48-inch diameter culvert would be installed under this road so that Joe's Creek can serve as a fish bypass return system from the FID Canal to Hood River. In addition, a 100-foot long, 48-inch diameter culvert would be installed to pass the creek under the water transmission pipeline. Depending on the final angle of the 100-foot culvert, either a series of step pools will be created in the lower 50 feet of the existing channel or a new channel approximately 55 feet long will be built to connect the culvert to Hood River. The bypass system is designed to pass fish safely both upstream and downstream. Jump pools have been incorporated into the design to allow juvenile and adult passage upstream. Construction would occur in the dry, except at the confluence of the downstream end of Joe's Creek with Hood River. All areas disturbed by construction activities will be planted with native trees, shrubs, and grasses.

As a precautionary measure, the bypass system will be designed to convey up to 120 cfs. In addition, a rock berm four feet high will be constructed between the bypass channel and the pipeline route to prevent any potential bypass overflow from eroding the pipeline structure. Berm construction will not require any tree removal.

1.2.3 Modification of the Water Diversion Intake

The existing intake and upper part of the concrete flume presently fill with sediments from Hood River requiring periodic labor-intensive clean out. The proposed intake modification is designed to reduce sediment that enters the irrigation intake and eventually the FID Canal. The modification consists of redistributing boulders and stream bottom material to shift the existing thalweg of Hood River slightly toward the west, away from the canal intake, and installing two sediment excluder sills in the upper end of the FID Canal itself.

The thalweg shift in Hood River would be in area referred to as Area A in the BA, approximately 280-feet long by 25-feet wide. Boulders removed from this area would be placed along the west side of the river, away from the FID Canal intake. The river substrate would be moved using a large track hoe with a “thumb” attachment. The area (Area B) to which boulders from Area A would be relocated is approximately 200-feet long by 40-feet wide. LWD in 18 to 24-inch diameter logs and rootwads would also be placed in Area B. Near the downstream end of Area A, in Area C, several large (3 to 4 cubic yard) boulders, imported to the project site, would be placed in the river. Imported boulders placed in Area C would increase “roughness” in the stream channel and serve to increase the backwater effect at the FID Canal intake. Area C is approximately 90-feet long by 50-feet wide. Large boulders imported to the site would be collected from upland deposit areas within the Hood River watershed. LWD imported for use in the project would be collected from scrap piles at previously logged sites. Trucks used to haul equipment, LWD, and boulders would reach the diversion intake site on an existing access road. Gravel would be added to this existing road prior to implementation of the project. A track hoe would be used to move boulders and LWD from a temporary upland deposit area to the appropriate position in Hood River.

The existing diversion intake berm (Area D) and the area directly downstream along the outside edge of the concrete FID Canal structure (Area E) would be stabilized by placing imported boulders and LWD, and by planting native trees and shrubs. Species to be planted include Columbia River willow (*Salix fluviatilis*), Geyer willow (*S. geyeriana*), Pacific willow (*S. lucida* var. *lasiandra*), Sitka willow (*S. sitchensis*), and black cottonwood (*Populus balsamifera*). The willows and cottonwoods would be planted as stakes and in bundles of three to five on approximately 1-foot centers. Area D is approximately 260-feet long and varies in width from 10 to 50-feet; while Area E is approximately 100-feet long and 30-feet wide. An area (Area F) on the opposite side of the concrete FID Canal structure from Area E would be filled with pit run gravel to create better access to the canal. All in-water work in Areas A-E is expected to be completed within 15 days. Area F, which is approximately 100-feet long by 15-feet wide and is on the opposite side of the concrete FID Canal from the river, is currently a low area where fish can become stranded when high winter and spring flows recede. Area F would be filled with pit run gravel to eliminate the low area.

Two sediment excluder sills (Area G) and two sediment extractors (Area H) will be installed to eliminate sediment once it has entered the mouth of the diversion from Hood River, and to prevent the sediment from being transported further down the FID canal. One sediment excluder sill would be installed at the mouth (upstream end) of the diversion and the other 100-feet down the canal from the mouth of the diversion. The sediment excluder sills are precast concrete

Jersey barriers, 12-feet long by 2-feet high. The sediment excluders work by causing a recirculating flow along the downstream face to keep sand-sized particles in suspension until they can be transported laterally and discharged into a sediment-flushing outlet back to the Hood River main channel. Besides the sediment excluder sills, two sediment extractor tubes would be installed in the canal. One sediment extractor would be at the mouth (upstream end) of the existing concrete canal, and the second would be approximately 500-feet down the canal. The tube sediment extractors consist of a pipe with a slot cut along one side parallel with the long axis of the pipe. The pipe is inset into the canal with the slot flush with the canal floor. The pipe has an open end at the side of the canal where discharge flows can return to the river. Water flow and sediment transported along the canal floor enters the pipe through the slot and exits the side of the canal. The momentum of flow entering from the canal induces a swirling flow along the circumference of the pipe. The swirling action will suspend captured particles permitting them to be transported laterally across the canal and discharged to the river.

1.3 Biological Information and Critical Habitat

The listing status and biological information for LCR steelhead are described in Busby et al. (1995, 1996). The listing status and biological information for LCR chinook salmon are described in Myers et al. (1998). The NMFS designated critical habitat for LCR steelhead and LCR chinook salmon on February 16, 2000 (65 FR 7764) and applied protective regulations under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). The adjacent riparian zone is included in this critical habitat designation.

Critical habitat for LCR steelhead in Oregon includes all river reaches accessible to listed steelhead in the mainstem Columbia River from its mouth upstream to Hood River; in Columbia River tributaries from the Willamette River upstream to Hood River inclusive; and tributaries to the Willamette River downstream from Willamette Falls. Critical habitat for LCR chinook salmon in Oregon is similar, except it also includes tributaries to the Columbia River downstream from the Willamette River. Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas – areas adjacent to a stream that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of LWD or organic matter – below longstanding, natural impassable barriers (i.e. natural waterfalls in existence for at least several hundred years) and several dams that block access to former LCR steelhead habitat. The proposed action in Hood River is within designated critical habitat for LCR steelhead and LCR chinook salmon.

Hood River serves as spawning, rearing, and migration habitat for LCR steelhead and LCR chinook salmon. Essential features of the area for these species are: (1) Substrate; (2) water quality; (3) water quantity; (4) water temperature; (5) water velocity; (6) cover/shelter; (7) food (juvenile only); (8) riparian vegetation; (9) space; and (10) safe passage conditions (50 CFR 226). The essential features this proposed project may affect are substrate, water quality (turbidity), cover/shelter, and safe passage conditions.

According to the BA, migrating adult LCR steelhead are present in the mainstem of Hood River year-round. Hood River supports both winter and summer steelhead that return in overlapping runs throughout the year. Hatchery steelhead from several Columbia River hatcheries are known to “stray” into Hood River. Wild steelhead destined for other Columbia River tributaries may do the same. Juvenile LCR steelhead are not likely to be present in the project area during the ODFW preferred in-water work period between July 15 and August 31. However, adult steelhead may be migrating through the area. The BA, citing S. Pribyl of ODFW, states that summer steelhead spawn in the West Fork of Hood River upstream from the project site, and that some spawning by winter steelhead is known to occur in the mainstem of Hood River. Winter steelhead spawn mainly in March and April, and would not be spawning, nor would eggs or alevins be present in the gravels, in the mainstem of Hood River during the preferred in-water work period between July 15 and August 31.

As stated above, wild chinook salmon in Hood River are considered extinct. Hatchery spring chinook spawn, rear, and migrate in Hood River and its tributaries, but these hatchery fish are not considered part of the LCR chinook salmon ESU. Hatchery chinook from several Columbia River hatcheries are known to “stray” into Hood River. Wild LCR chinook salmon destined for other Columbia River tributaries may do the same. Juvenile LCR chinook salmon are not likely to be present in the project area during the ODFW preferred in-water work period between July 15 and August 31. Chinook salmon are known to spawn in the mainstem of Hood River.

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of: (1) Defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: 1) Collective effects of the proposed or continuing action; 2) the environmental baseline; and 3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the continued existence of the listed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential feature of critical habitat. The NMFS then considers whether such impairment

appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, spawning, and rearing of the listed and proposed species under the existing environmental baseline.

1.4.1 Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. The NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list LCR steelhead and LCR chinook salmon for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for LCR steelhead and LCR chinook salmon to survive and recover to a naturally reproducing population level at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the listed species, based upon their risk of extinction, has not significantly improved since the species were listed.

1.4.2 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human-caused and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as, "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The action area for this consultation, therefore, includes the streambed and streambank of the mainstem of Hood River within the area of disturbance at the FID Canal diversion intake and downstream to approximately 300 feet below its confluence with Joe's Creek and the streambed and streambank of Joe's Creek from the point of entry of the newly constructed bypass channel downstream to the mouth of Joe's Creek.

The current population status and trends for LCR steelhead are described in Busby et al. (1996), while those for LCR chinook salmon are described in Myers et al. (1998). In general, the current

status of LCR steelhead and LCR chinook salmon populations is the result of several long-term, human-induced factors (e.g., habitat degradation, water diversions, hydropower dams) that serve to exacerbate the adverse effects of natural environmental variability from such factors as drought, floods, and poor ocean conditions.

Environmental baseline conditions within the action area were evaluated for the subject action at the project site and watershed scales. The results of this evaluation, based on the “matrix of pathways and indicators” (MPI) described in NMFS (1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. An assessment of the essential features of LCR steelhead and LCR chinook salmon critical habitat is obtained by using the MPI process to evaluate whether aquatic habitats are properly functioning. In the mainstem of Hood River, 15 of the 18 habitat indicators were rated as functioning “at risk,” based on thresholds presented in the MPI. Water temperature, LWD, and width to depth ratio were rated as not properly functioning. None of the 18 MPI parameters were rated as properly functioning. The condition of each indicator is described in Sections 5.1 and 5.2 of the BA, and those descriptions are incorporated herein by reference. Hood River, from its mouth to Clear Creek (including the action area) is on the Oregon Department of Environmental Quality (ODEQ) Clean Water Act Section 303(d) list because of high water temperature.

According to the BA, the Newton-Clark Glacier slope failure several miles upstream from the FID Canal project site deposited millions of cubic yards of material in the Hood River watershed during the fall of 2000. Turbidity and sediment loads in Hood River are generally high during the preferred in-water work period (July 15 to August 31) because of glacial runoff. Dominant substrate material in Hood River at the project site is boulders and large cobble. Little, if any, suitable spawning habitat for LCR steelhead or LCR chinook salmon is present in Hood River near the proposed project.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

1.5.1.1 Fish Screen Replacement

Installation of the new HFP fish screen would occur in the dry. No impacts to water quality in Hood River are expected. Installation of the new screen is expected to minimize or eliminate the danger that LCR steelhead and LCR chinook salmon will be entrained into the FID Canal, where they would become stranded and die.

Once the new screen is in place, a slight potential exists for fish to become stranded on the screen if a catastrophic event plugs the FID Canal intake with debris. If flow into the canal intake is blocked during a major catastrophic event, the screen would be dewatered and fish could potentially be stranded. The FID has never experienced such an event with the existing system. Since the thalweg of Hood River will be shifted slightly away from the FID Canal

intake as part of the proposed project, the potential for blockage of the canal intake should be reduced even further from present conditions.

1.5.1.2 Construction of a New Fish Bypass System

The excavation of pools, placement of boulders, and placement of LWD in the newly constructed portion of the bypass system and in Joe's Creek, and installation of culverts in Joe's Creek will result in disturbance of the stream substrate. These activities will occur in the dry and no impacts to water quality in Hood River are expected. The initial introduction of water through the new bypass system may result in a temporary increase in turbidity in Hood River downstream from Joe's Creek. Potential turbidity increases would be minimized by slowly ramping the initial flows from the fish screen bypass into Joe's Creek to allow the channel to stabilize. Creation of step pools at the downstream end of the bypass, where it enters Hood River, could also result in some minimal amount of sediment entering Hood River. The temporary increase in stream turbidity in Hood River could result in temporarily reduced feeding efficiency for juvenile salmonids that may be present in the area. However, since turbidity in Hood River is usually high during summer months because of glacial runoff from Mt. Hood, any additional turbidity resulting from work in Joe's Creek may not be detectable in Hood River. Because Joe's Creek is an intermittent stream in the project area, no juvenile salmonids are expected to be present where excavation will occur. Therefore, operation of the excavator is not expected to kill or injure any juvenile salmonids in Joe's Creek.

The bypass system is designed to provide both upstream and downstream passage for juvenile and adult salmonids. The lack of significant attraction flows at the mouth of Joe's Creek would likely limit the number of adult LCR steelhead or LCR chinook salmon entering the creek from Hood River. Joe's Creek may provide a refuge from high flow events in the mainstem of Hood River for juvenile and adult salmonids, and is expected to provide rearing habitat for juvenile salmonids.

1.5.1.3 Modification of the Water Diversion Intake

Movement of boulders and placement of LWD in Areas A and B to shift the thalweg of Hood River away from the water diversion intake on the FID Canal and placement of imported boulders in Area C require operation of a track hoe below the ordinary high water mark (OHWM) and within the wetted width of Hood River. Placement of boulders and LWD on the existing diversion intake berm in Area D and along the existing concrete canal edge in Area E, and placement of the sediment excluder sills within the FID Canal also require use of a track hoe within the OHWM of Hood River, but little if any work within the wetted width of Hood River. Disturbance of substrate in Hood River would result in a short-term increase in the turbidity of Hood River at the project site and downstream. However, as stated above, turbidity levels and sediment loads in Hood River during the in-water work period (July 15- August 31) are generally quite high due to glacial runoff from Mt. Hood. The temporary increase in turbidity in Hood River, though it is expected to be a slight increase over baseline levels for that time of year, could result in temporarily reduced feeding efficiency for juvenile LCR steelhead or LCR

chinook salmon that may be present in the project area. It is also possible that in moving boulders and placing LWD, the track hoe may kill or injure listed juvenile salmonids. Direct mortality is expected to be minimal, because juvenile fish will likely avoid the equipment and can move freely upstream or downstream from the project site. Because little, if any, spawning habitats for LCR steelhead or LCR chinook salmon spawning habitat are present in Hood River near the proposed project, spawning habitat for these species will not be adversely affected by the in-stream work.

Besides temporary increases of turbidity, movement of boulders and placement of LWD (Areas A and B) to shift the thalweg of Hood River away from the water diversion intake on the FID Canal and placement of imported boulders in Area C could result in some change of stream hydraulics at the water intake site and downstream. Movement of boulders would not result in increased water velocities that would impede fish passage, and no barriers to fish passage would be created. Substrates in Hood River at the water intake site and downstream are dominated by boulders and streambanks are well armored. Therefore, any change in stream hydraulics resulting from the slight shift of the thalweg at the water intake site is not expected to result in any streambank erosion downstream.

1.5.2 Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Those essential features which may be affected by this project in Hood River are substrate, water quality, and safe passage. For the proposed action, NMFS expects that the long-term effects will tend to improve current baseline conditions and increase available salmonid rearing habitat in Joe's Creek over the long term.

1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the action area for this consultation, therefore, includes the streambed and streambank of the mainstem of Hood River within the area of disturbance at the FID Canal diversion intake and downstream to approximately 300 feet below its confluence with Joe's Creek and the streambed and streambank of Joe's Creek, from the point of entry of the newly constructed bypass channel downstream to the mouth of Joe's Creek. Other activities within the Hood River watershed have the potential to adversely affect fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities will be reviewed through separate section 7 consultation processes. NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

1.6 Conclusion

NMFS has determined that, when the effects of the FID Canal project addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, it is not likely to jeopardize the continued existence of LCR steelhead or LCR chinook salmon. Additionally, NMFS concludes that the subject action would not cause adverse modification or destruction of designated critical habitat for LCR steelhead or LCR chinook salmon. NMFS believes that the proposed actions would cause a minor, short-term increase in stream turbidity in the mainstem of Hood River downstream from the project area. Turbidity levels during the July 15 to August 31 in-water work window are normally high in Hood River because of glacial runoff from Mt. Hood. Long-term effects will include improved fish survival due to improvements in the diversion intake, fish screen, and fish bypass system. Although direct mortality of adult or juvenile LCR steelhead and LCR chinook salmon from this project could occur during in-water work, it is not expected, and potential mortality would be minimal and would not result in jeopardy.

These conclusions are based on the following considerations: 1) All in-water work will be completed during the ODFW preferred in-water work period between July 15 and August 31 when listed salmonids are least likely to be present; 2) the amount of water diverted from Hood River into the FID Canal will not be changed by this project; 3) replacement of the obsolete rotary drum fish screen with the new HFP screen is expected to minimize or eliminate the potential for LCR steelhead and LCR chinook salmon to pass the screen and enter the FID Canal; 4) replacement of the existing flexible culvert fish bypass system with the new bypass system will result in a more natural, gentler means of returning fish from the FID Canal to Hood River and will create additional salmonid rearing habitat in Joe's Creek; 5) modification of the FID Canal diversion intake is expected to reduce the sediment entering the canal and thus, reduce the need for sediment removal from the canal and improve the functionality of the new fish screen; and 6) NMFS expects that the net effect of the proposed action will be to maintain or help restore properly functioning habitat conditions in the project area of the mainstem of Hood River and Joe's Creek.

1.7 Reinitiation of Consultation

Consultation must be reinitiated, if the newly installed HFP screen does not meet NMFS acceptance standards for mortality and injury of salmonid smolts and fry listed below in Section 2.3. Consultation must also be reinitiated if: 1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; 2) new information reveals effects of the action may affect listed species in a way not previously considered; 3) the action is modified in a way that causes an effect on listed species that was not previously considered; or 4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). To reinitiate consultation, the BPA should contact the Habitat Conservation Division (Oregon Branch Office) of NMFS.

2. INCIDENTAL TAKE STATEMENT

Section 4 (d) and Section 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering (64 FR 60727; November 8, 1999). Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement. An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion has more than a negligible likelihood of resulting in incidental take of listed salmonids because of detrimental effects from increased turbidity levels (non-lethal), and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as the one covered by this Opinion are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information provided by the BPA and other available information, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the action covered by this Opinion. The extent of the take is limited to the project area.

2.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion. The BPA shall:

1. Minimize the amount and extent of incidental take resulting from in-water work required to complete the project addressed in this Opinion by implementing measures to limit the duration and extent of in-water work.

2. Minimize the amount and extent of take and impacts on critical habitat resulting from erosion and chemical pollution associated with this project by implementing measures that minimize the movement of soils and sediment both into, and within, the river and minimize or avoid the potential for chemical pollution.
3. Minimize the potential for take associated with installation and operation of the FID Canal fish screen.
4. Complete a comprehensive monitoring and reporting program to ensure this Opinion is meeting its objective of minimizing the likelihood of take from permitted activities.

2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the BPA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (in-water work), above, the BPA shall ensure that:
 - a. All work within the active channels of Hood River and Joe's Creek will be completed within the ODFW approved in-water work period (July 15 to August 31).²
 - b. Extension of the in-water work period, including those for work outside the wetted perimeter of the stream but below the ordinary high water mark must be approved by biologists from NMFS.
 - c. In-water work will not inhibit passage of any adult or juvenile salmonid species throughout the construction period or after project completion.
2. To implement reasonable and prudent measure # 2 (erosion and pollution), above, the BPA shall ensure that:
 - a. All equipment that is used for instream work will be cleaned before entering the job site. External oil and grease will be removed, along with dirt and mud. Wash and rinse water will not be discharged into streams and rivers without adequate treatment. Areas for fuel storage and servicing of construction equipment and vehicles will be at least 150-feet away from any water body.

² Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp. (June 2000) (identifying work periods with the least impact to fish) (http://www.dfw.state.or.us/ODFW_html/InfoCntrHbt/0600_inwtrguide.pdf)

- b. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment has been developed and can be carried out at the project site.
 - c. Material removed or excavated from the river bottom (Area A), that will not be moved to another location in project Areas B-F as described in Section 1.2.3 above, will be placed in locations where it cannot enter streams or other water bodies.
 - d. Appropriate erosion control devices (e.g., silt fencing or straw bales) will be placed to prevent turbid water from entering Hood River or other water bodies from the project access road, when excavated material is loaded into trucks for removal from the project site, and during transportation to the final upland disposal site.
3. To implement reasonable and prudent measure #3 (fish screen installation and operation), above, the BPA shall ensure that:
- a. The FID continues to work with NMFS, USFWS, CTWSRO, and ODFW to verify that the completed screen design is equivalent to conventional screens in minimizing and avoiding take of listed salmonid species and meets NMFS acceptance standards for mortality or injury of juvenile salmonids. Those acceptance standards are as follows³:
 - i. Smolt (greater than 60 mm in length) mortality: Design performance objective of less than 0.5% mortality; actual mortality greater than 0.5%, but less than 2.0% would require additional work to lessen mortality; actual mortality of greater than 2.0% would require abandonment of experimental HFP screen and installation of conventional screen.
 - ii. Smolt (greater than 60 mm in length) injury: Design performance objective of less than 2.0% injury; actual injury greater than 2.0%, but less than 4.0% would require additional work to lessen injury; actual injury of greater than 4.0% would require abandonment of experimental HFP screen and installation of conventional screen.

³ E-mail from Melissa Jundt, National Marine Fisheries Service, to Ron Lindland, National Marine Fisheries Service (July 30, 2001) listing NMFS acceptance standards for mortality or injury of juvenile salmonids at fish screens.

- iii. Fry (less than 60 mm in length) mortality: Design performance objective of less than 2.0% mortality; actual mortality greater than 2.0%, but less than 4.0% would require additional work to lessen mortality; actual mortality of greater than 4.0% would require abandonment of experimental HFP screen and installation of conventional screen.
 - iv. Fry (less than 60 mm in length) injury: Design performance objective of less than 4.0% injury; actual injury greater than 4.0%, but less than 6.0% would require additional work to lessen injury; actual injury of greater than 6.0% would require abandonment of experimental HFP screen and installation of conventional screen.
 - b. FID personnel are on-site during high flow events in Hood River which have the potential to plug the FID Canal water intake with debris.
 - c. During such an event, FID personnel would close the pipeline intake, if possible, and check the fish screen periodically for stranded fish.
- 4. To implement reasonable and prudent measure #4 (monitoring and reporting), above, the BPA shall ensure that:
 - a. Within 30 days of completing the project, the BPA will submit a monitoring report to NMFS describing their success at meeting these terms and conditions. This report will consist of the following information:
 - i. Project identification.
 - (1) Project name;
 - (2) starting and ending dates of work completed for this project; and
 - (3) the name and address of the construction supervisor.
 - ii. A narrative assessment of the project's effects on natural stream function.
 - iii. Photographic documentation of environmental conditions at the project site before, during and after project completion.
 - (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
 - (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
 - (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.
 - b. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to the National Marine Fishery Service Law

Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360/418-4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

- c. Within one year of completion of all phases of the project (new screen installation, new bypass construction, water intake modification), BPA will submit a report to NMFS describing:
 - i. Effectiveness of the new HFP screen in passing listed salmonids, uninjured, through the FID Canal bypass facility and back into Hood River.
 - ii. Use of the newly created rearing habitat in Joe's Creek by juvenile salmonids.
- d. Monitoring reports will be submitted to:

National Marine Fisheries Service
Oregon Habitat Branch
Attn: OSB2001-0022
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

3. MAGNUSON-STEVENSON ACT

3.1 Background

The objective of the Essential Fish Habitat (EFH) consultation is to determine whether the proposed action described above may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NMFS on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;
- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon, and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e. natural waterfalls in existence for several hundred years)(PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km)

offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*)(PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Action

The proposed action is detailed above in Section 1.2. The action area includes the streambed and streambank of the mainstem of Hood River within the area of disturbance at the FID Canal diversion intake and downstream to approximately 300 feet below its confluence with Joe's Creek and the streambed and streambank of Joe's Creek from the point of entry of the newly constructed bypass channel downstream to the mouth of Joe's Creek. This area has been designated as EFH for various life stages of chinook salmon (*O. tshawytscha*) and coho salmon (*O. kisutch*).

3.5 Effects of Proposed Action

As described in detail in Section 1.5.1, the proposed activity may result in detrimental short-term effects to water quality (turbidity) and disturbance of stream substrate. The temporary increase in stream turbidity could result in temporarily reduced feeding efficiency for juvenile salmonids which may be present in the area. The movement and relocation of boulders in Hood River would not result in increased water velocities that would impede fish passage, and no barriers to fish passage would be created. Substrate in Hood River at the water intake site and downstream is dominated by boulders and streambanks are well armored. Therefore, any change in stream hydraulics resulting from the slight shift of the thalweg at the FID Canal water intake site is not expected to result in any streambank erosion downstream.

3.6 Conclusion

NMFS believes that the proposed action may adversely affect the EFH for chinook salmon and coho salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures that the BPA has built into the project are generally applicable to EFH for the designated species, and are intended minimize the potential adverse effects to EFH. However, these measures do not address the potential impacts described above. Consequently, the NMFS incorporates the reasonable and prudent measures and associated terms and conditions of this incidental take statement as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the BPA to provide a written response to NMFS' EFH conservation recommendations within 30 days of its receipt of this letter. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. If the response is inconsistent with NMFS' conservation recommendations, the reasons for not implementing the BPA shall explain its reasons for not following the recommendations.

3.9 Consultation Renewal

The BPA must reinitiate EFH consultation with NMFS if either action is substantially revised or new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920).

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